





# D Series

## Single-Phase Central Lighting Inverters

### OPTIONS AND ACCESSORIES

Suffix	Options	Description
<b>EML</b>	Email Device	A device that automatically notifies the user of system test results and alarm conditions. The Email Device sends detailed notifications to up to six pre-programmed email addresses. Requires customer supplied CAT5 cable connected to user network.
<b>RSP</b>	Remote Status Panel	Provides remote annunciation for the LSN inverter to indicate inverter and alarm status. Owner-installed option. Must be installed within 1,000 ft. of the LSN inverter. Seven-conductor-minimum, 22AWG wire for connection from options board to Remote Status Panel must be supplied by installer.
<b>SMT</b>	System Monitoring Terminals	Provides connections points for Inverter and Alarm Relays (low power contacts change status with either inverter or alarm events), and Remote Status Panel (allows the addition of an RSP at any time).
<b>EPO</b>	Emergency Power Off	Provides a set of terminals to which an Emergency Power Off switch can be wired. Closing the switch will immediately shut down the system. Note: the EPO option requires the SMT option.
<b>AR</b>	Alternate Runtime	Runtimes other than the standard 90 minutes may be specified. When ordering alternate runtimes, specify discharge time required in minutes. Example: AR30
<b>SBC</b>	Short Battery Cabinet	For applications where headroom is limited. Reduces the overall height by 15 inches. Available on systems with ratings from 1.0, 2.0, 2.7, 3.7, 5.5, and 6.6KVA series with Type S batteries only. Dimensions: 31"H x 30"W x 18 5/8"D.
<b>C10</b> <b>C20</b>	Charger Upgrades	10 Amp charger upgrade. Available on 1.0KVA - 4.8KVA Series. 20 Amp charger upgrade. Available on 5.5KVA - 17.5KVA Series.
<b>CL60</b>	Cabinet Locks	Universal cabinet locks for all electronic and battery cabinets.
	Monitored Circuit Breakers	Monitored output circuit breakers (normally-on or normally-off) will sound an alarm when tripped. See Ordering Guide.
	Normally-On Circuit Breakers	Specified when connected loads are to be energized at all times. See Ordering Guide.
	Normally-Off Circuit Breakers	Specified when connected loads are only energized during emergency operation. A user-programmable retransfer delay (up to 999 seconds) to normal utility power is provided. See Ordering Guide.
<b>IBS</b>	Internal Maintenance Bypass Switch	A three-position "make before break" service switch mounted inside the cabinet. Compatible with all input/output combinations and any combination or quantity of output circuit breakers.
<b>S</b>	Seismic Qualified	Unit provided as a seismic tested and qualified inverter. Unit will continue to operate during and after a seismic event when installed per instructions. Complies with UBC-1997, IBC-2012, CBC 2013 (OSHPD OSP-0365-10), and ASCE7-10 S <sub>DS</sub> =2.0g for <sup>z</sup> / <sub>h</sub> =1 and S <sub>DS</sub> =2.5g for <sup>z</sup> / <sub>h</sub> =0.1 <sub>p</sub> =1.5.
Suffix	Accessories	Description
<b>FSL</b>	Factory Start-Up	Start-Up, inspection, test and calibration of system by Dual-Lite factory trained technician.

### FEATURES

**Installation**  
Input power entry point is from the cabinet top. Bottom channels for lifting straps and wall brackets for anchoring. Servicing is accessible from cabinet front.

**Compliances**  
UL 924 Listed, Emergency Lighting and Power Equipment (standard 90 minute run time)  
UL & CUL 1778 Listed, Uninterruptible Power Supply Equipment (alternate run times; types G and N batteries)  
ANSI C62.41: ANSI C62.45 (Cat. A & B)  
FCC class A  
National Electrical Code (NFPA 70)  
Life Safety Code (NFPA 101)  
NEMA Type 1 Cabinetry  
OSHA, state and local codes  
Made in U.S.A.

**Warranty**  
Two years full on all components from date of shipment when a Factory Start-Up is ordered; one year full when a Factory Start-Up is not ordered. Batteries are covered under a separate warranty:

Battery Type	Full	Pro-rata
S (sealed lead-calcium)	1 year	9 years
G (sealed lead-calcium)	1 year	14 years
N (wet nickel-cadmium)	1 year	14 years

Batteries must be connected to an energized charging circuit within 90 days from date of shipment or warranty is void.

*Factory Start-Up must be performed within 6 months of inverter shipment to maintain 2 yr full warranty.*



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### SPECIFICATIONS

KVA/KW Rating	1.0K	2.0K	2.7K	3.7K	4.8K	5.5K	6.6K	8.3K	10.0K	12.5K	15.0K	17.5K
Power Factor Range	.8 lead to .75 lag											
Input/Output Voltage Combinations Available – Single Phase	Input VAC: 120, 208, 240, 277, 347 Output VAC: 120, 240, 277, 347, 120/240 <sup>(1)</sup> , 120/277 Other voltages available; consult factory <sup>(2)</sup>							Input VAC: 208, 240, 277, 347 <sup>(3)</sup> Output VAC: 120, 240, 277, 347, 120/240 <sup>(1)</sup> , 120/277 Other voltages available; consult factory <sup>(2)</sup>				
AC Input Circuit Breaker Rating – 120/277V	120/20A 208/15A 240/15A 277/15A 347/15A	120/30A 208/20A 240/15A 277/15A 347/15A	120/40A 208/25A 240/20A 277/20A 347/20A	120/50A 208/30A 240/25A 277/25A 347/20A	120/70A 208/40A 240/35A 277/30A 347/25A	120/70A 208/40A 240/35A 277/30A 347/25A	120/80A 208/50A 240/45A 277/40A 347/30A	– 208/70A 240/60A 277/50A 347/50A	– 208/80A 240/70A 277/60A 347/50A	– 208/100A 240/80A 277/70A 347/60A	– 208/125A 240/100A 277/90A 347/80A	– – 277/100A 347/80A
Output Voltage and Maximum Output Current in Amperes	120/8.3 240/4.2 277/3.6 347/2.9	120/16.7 240/8.3 277/7.2 347/5.8	120/22.5 240/11.3 277/9.7 347/7.8	120/30.8 240/15.4 277/13.4 347/10.7	120/40.0 240/20.0 277/17.3 347/13.8	120/45.8 240/22.9 277/19.9 347/15.9	120/55.0 240/27.5 277/23.8 347/19.0	120/69.2 240/34.6 277/29.9 347/23.9	120/83.3 240/41.7 277/36.1 347/28.8	120/104.0 240/52.1 277/45.1 347/36.0	120/125 240/62.5 277/54.2 347/43.2	120/146 240/72.9 277/63.2 347/50.4
Standard Charger Size	5 Amps						10 Amps			15 Amps		
System DC Voltage	96	96	96	96	96	96	96	144	144	144	144	144
Heat Output (BTU/Hr)	175	350	473	648	840	963	1,155	1,453	1,750	2,188	2,625	3,063

<sup>(1)</sup> On systems with 120/240VAC output, loading may not exceed 50% of the system's total KVA rating on any 120V leg. Loading beyond 50% on any 120V leg will cause an unsafe condition and transformer failure will occur. Call our Service Line at 800-848-6439 for alternate load connection configurations.

<sup>(2)</sup> An external transformer will be provided for 12.5K and 15.0K configurations with 208VAC and 240VAC input.

<sup>(3)</sup> Input voltage on 17KVA model limited to 277 and 347VAC only.

<b>Electrical</b>	
System Short Circuit Rating: 42K AIC, RMS symmetrical	
Surge Voltage Test: Per UL 924	
Input Power Connection: Terminal block	
Input Circuit Breaker: Sized to system rating	
Power Factor: Unity 1.0 (KW = KVA)	
Power Consumption: Offline, 98% efficient	
Inverter Design: Pulse width modulation via IGBT circuitry	
IGBT Frequency Switching Rate: 16K Hz per second	
Input Voltage:	
1.0 - 6.6KW/KVA	8.3 - 17.5KW/KVA <sup>(1)</sup>
120, 208, 240, 277, 347VAC	208, 240, 277, 347

<sup>(1)</sup> Input voltage on 17.5KVA model limited to 277 and 347VAC only.

Input Voltage Range: Invert, +10%, - 12%; boost, -8%  
Input Frequency: 60 Hz, ±3%  
Synchronizing Slew Rate: 1 Hz per second, nominal  
Transfer Time: "No break" switching; instantaneous  
Output Wave Shape: True AC sine wave  
Output Frequency: Normal: synchronized to utility;  
Inverter: ±0.05, 60 Hz, +0.05 Hz  
Output Voltage:

1.0 - 6.6KW/KVA	8.3 - 17.5KW/KVA
120, 240, 277, 347, 120/240 <sup>(1)</sup> , 120/277	120, 240, 277, 347, 120/240 <sup>(1)</sup> , 120/277

<sup>(1)</sup> On systems with 120/240VAC output, loading may not exceed 50% of the system's total KVA rating on any 120V leg. Loading beyond 50% on any 120V leg will cause an unsafe condition and transformer failure will occur. Call factory for alternate load configurations.

Main Output Overcurrent Protection: Circuit breaker, output fuse  
Optional Output Circuit Breakers: Normally-On or Normally-Off, monitored or unmonitored, per customer requirements.  
See "Ordering Guide".  
Output Regulation: (static) ±5% (5% to 100% resistive load)  
Output Distortion: Less than 5% THD (linear load)  
Battery Circuit Breaker: Sized to system rating

Battery Cabinet Short Circuit Breaker Protection: Circuit breaker and fuses  
Overload Rating: 150% momentary; 120% for five minutes, 110% for 10 minutes  
Two way communication: DB9/RS232 standard  
Overload/Short Circuit Protection: Circuit breakers and fuses  
AC Lockout: Prevents battery discharge following installation when AC power is not present  
Output Voltage Regulation: Automatic boost tap circuit maintains output voltage during utility low voltage "brownout" periods without switching to battery power  
Low Voltage Battery Disconnect: Protects the batteries from damaging "deep discharge" conditions during prolonged power outages  
Time Delay Retransfer: Supplied with "normally off" optional output circuit breakers. Holds the unit in emergency mode after normal AC power is restored, allowing utility power to stabilize and voltage sensitive lighting to resume normal operation.  
Delay time is user programmable.  
Test Means: Spectron® self-test/self-diagnostic microprocessor controlled circuitry; manual programmable testing  
Indicators: Visual LED indicators, visual graphic display (2 lines, 40 characters), audible alarm system, RS232 two-way communication. Security: Password protected user interface; locking cabinets  
Interior Relative Humidity: 95% non-condensing

**Battery/Charging System Specifications**  
Standard Run Time: 90 minutes per UL 924. Optional run times available via UL 1778 listing.  
Charger: Three-step float, temperature compensated. 5 amp, 10 amp, or 15 amp, depending on system rating.  
Bus Voltage: 96VDC or 144VDC (system rating dependent)  
Battery Condition Monitoring System: Standard  
Recharge Cycle: Within UL requirements  
Type: Non-spillable "S" Series standard; optional type G and type N available. See "Battery" section on following page.  
DC Switch: Provides isolation and back-feed protection  
Operating Temperature Range: 20°C to 30°C (68°F to 86°F)



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### System Configurations for 90-Minute Runtime

#### Type S Battery Maintenance-Free Sealed Lead-Calcium – 10-Year Design Life Expectancy at 25°C (77°F)

Standard LSN system battery; lead calcium grid alloy with electrolyte trapped in absorbent glass mat (AGM) separators. Completely sealed and requires no addition of water over its life expectancy. Polypropylene case and cover includes UL recognized low pressure safety release vents. No gassing will occur in normal use.

System Capacity	1.0K	2.0K	2.7K	3.7K	4.8K	5.5K	6.6K	8.3K	10.0K	12.5K	15.0K	17.5K
System Configuration	A	A	A	A	A	B <sup>(1)</sup>	B <sup>(1)</sup>	B <sup>(1)</sup>	B <sup>(1)</sup>	B <sup>(1)</sup>	C <sup>(1)</sup>	C <sup>(1)</sup>
Total Weight (lbs.)*	838	1,116	1,122	1,222	1,492	1,926	2,130	2,475	2,829	2,861	4,121	4,393
Seismic Kit Configuration	DSFKA1					DSFKB1 <sup>(1)</sup>		DSFKB2 <sup>(1)</sup>		DSFKB3 <sup>(1)</sup>		DSFKC1 <sup>(1)</sup>

#### Type G Battery Maintenance-Free Sealed Lead-Calcium – 20-Year Design Life Expectancy at 27°C (80°F)

Optional LSN system battery; plates are separated by a highly porous glass mat, which functions as the electrolyte retainer. Provides the highest possible oxygen recombination. Completely sealed and requires no addition of water over its life expectancy. ABS flame retardant case and lid.

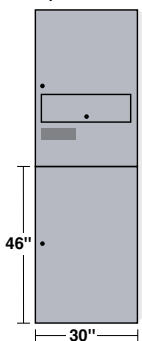
System Capacity	1.0K	2.0K	2.7K	3.7K	4.8K	5.5K	6.6K	8.3K	10.0K	12.5K	15.0K	17.5K
System Configuration	A	A	A	A	B	B	B	B	B	D	D	D
Total Weight (lbs.)*	1,365	1,384	1,390	1,472	1,684	2,062	2,630	2,679	3,589	3,657	4,885	5,491

#### Type N Battery Wet-Cell Nickel-Calcium – 25-Year Design Life Expectancy at 25°C (77°F)

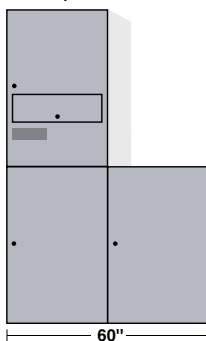
Optional LSN system battery; pocket plate nickel-cadmium elements in an alkaline electrolyte. Polypropylene containers are standard; each cell is provided with a flip-top, flame arresting, UL recognized vent cap. Covers provide dead-top isolation. Maintainable "wet-cell" construction, requires the addition of distilled water over its life expectancy.

System Capacity	1.0K	2.0K	2.7K	3.7K	4.8K	5.5K	6.6K	8.3K	10.0K	12.5K	15.0K	17.5K
System Configuration	B	B	B	B	B	C	C	D	D	E	E	Consult Factory
Total Weight (lbs.)*	1,075	1,486	1,644	1,894	2,232	2,532	2,812	3,481	3,940	4,720	5,505	

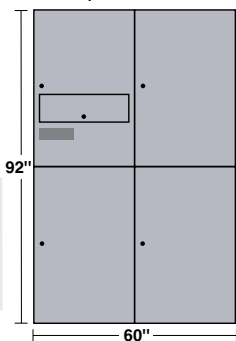
Configuration "A"  
Depth 18 5/8"



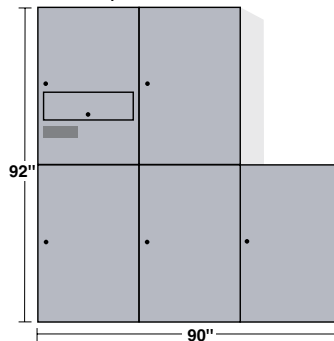
Configuration "B"  
Depth 18 5/8"



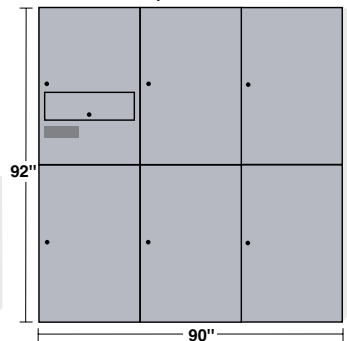
Configuration "C"  
Depth 18 5/8"



Configuration "D"  
Depth 18 5/8"



Configuration "E"  
Depth 18 5/8"



Consult factory for alternate runtimes and battery cabinet configurations.  
External transformer (not illustrated) is provided for 12.5K and 15.0K configurations with 208VAC and 240VAC input.  
Transformer cabinet dimensions are 18" W x 28" H x 15" D and weighs 250 lbs.

<sup>(1)</sup>Add 12" of space to the width between cabinet stacks for seismic qualified option or DSFK seismic kits.

